

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES  
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum  
Internationales Büro



(43) Internationales Veröffentlichungsdatum  
13. Februar 2003 (13.02.2003)

PCT

(10) Internationale Veröffentlichungsnummer  
WO 03/012420 A1

(51) Internationale Patentklassifikation<sup>7</sup>: G01N 27/18, 27/12, B81B 3/00

(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): ROBERT BOSCH GMBH [DE/DE]; Postfach 30 02 20, 70442 Stuttgart (DE).

(21) Internationales Aktenzeichen: PCT/DE02/02480

(22) Internationales Anmeldedatum:  
6. Juli 2002 (06.07.2002)

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): BENZEL, Hubert [DE/DE]; Stellenaeckerstrasse 3, 72124 Pliezhausen (DE). WEBER, Heribert [DE/DE]; Im Hoefle 28, 72622 Nuertingen (DE). BAUER, Michael [DE/DE]; Ahornweg 2, 72076 Tuebingen (DE). ARTMANN, Hans [DE/DE]; Liebenzeller Weg 2/1, 71106 Magstadt (DE). PANNEK, Thorsten [DE/DE]; Hasenbergstrasse 99, 70176 Stuttgart (DE). SCHAEFER, Frank [DE/DE]; Otto-Erbe-Weg

(25) Einreichungssprache: Deutsch

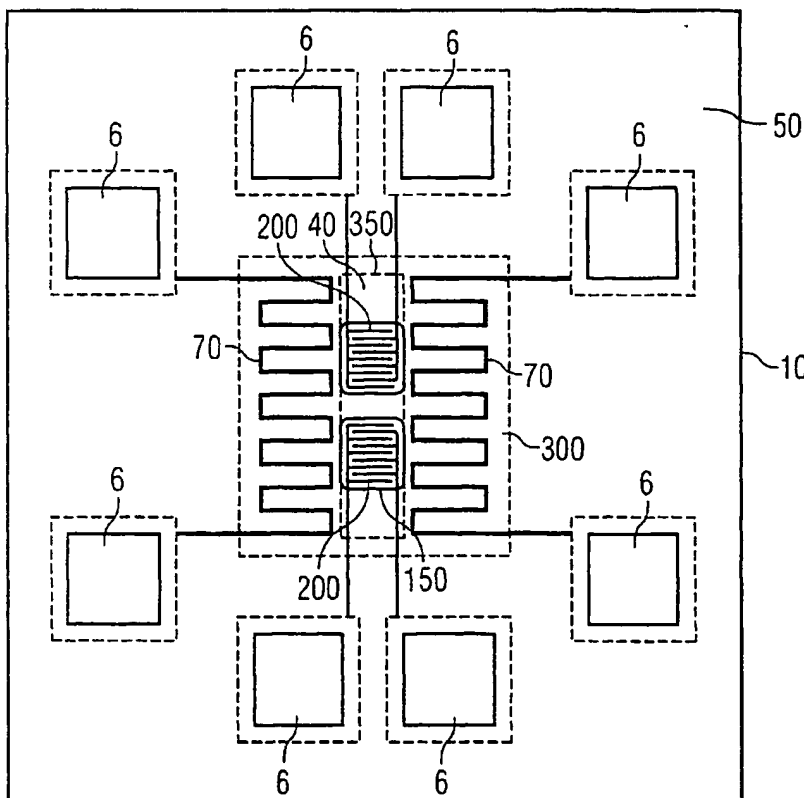
(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:  
101 36 164.5 25. Juli 2001 (25.07.2001) DE

[Fortsetzung auf der nächsten Seite]

(54) Title: MICROMECHANICAL COMPONENT

(54) Bezeichnung: MIKROMECHANISCHES BAUELEMENT



(57) Abstract: The invention relates to a micromechanical component comprising a substrate (10) and a covering layer (40) which is applied thereon. A porous material is provided under the covering layer (40) in an area (30; 30') which is mechanically supporting and thermally insulating. A heating device (70) is provided on the covering layer (40) for the heating thereof, above the area (30; 30'), and a detection device, (200, 200') for detecting electrical characteristics of a heated medium (150) disposed above said area (30; 30'), is arranged above the area (30; 30') on the covering layer (40).

(57) Zusammenfassung: Die Erfindung schafft ein mikromechanisches Bauelement mit einem Substrat (10) und einer auf dem Substrat (10) aufgetragenen Deckschicht (40), wobei unterhalb der Deckschicht (40) ein die Deckschicht (40) mechanisch unterstützender und thermisch isolierender

Bereich (30; 30') aus porösem Material vorgesehen ist. Auf der Deckschicht (40) ist eine Heizeinrichtung (70)

[Fortsetzung auf der nächsten Seite]

BEST AVAILABLE COPY

## INTERNATIONAL SEARCH REPORT

Int lonal Application No  
PCT/DE 02/02480

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G01N27/18 G01N27/12 B81B3/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N B81B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MACCAGNANI P ET AL: "THICK POROUS SILICON THERMO-INSULATING MEMBRANES" SENSORS AND MATERIALS, SCIENTIFIC PUBLISHING DIVISION OF MYU, TOKYO, JP, vol. 11, no. 3, 1999, pages 131-147, XP008001539 ISSN: 0914-4935	1,2,5-9
Y	abstract; figure 1 page 133-138	1-9
Y	US 5 659 127 A (SHIE JIN-SHOWN ET AL) 19 August 1997 (1997-08-19) abstract column 5, line 43 -column 7, line 18 --- -/--	1-9



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

22 October 2002

Date of mailing of the international search report

30/10/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Klein, M-O

## INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/DE 02/02480

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 464 966 A (SUEHLE JOHN S ET AL) 7 November 1995 (1995-11-07) abstract; figure 5 column 6, line 19-37 ----	1-3,6-9
Y	WO 98 50763 A (NASSIOPOULOU ANDROULA G ;NCSR DEMOKRITOS (GR); KALTSAS GRIGORIS (G) 12 November 1998 (1998-11-12) abstract; claim 3 page 1-3 ----	1-3,6-9
A	LAMMEL G ET AL: "Free-standing, mobile 3D porous silicon microstructures" SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 85, no. 1-3, 25 August 2000 (2000-08-25), pages 356-360, XP004214496 ISSN: 0924-4247 cited in the application the whole document ----	1-9
A	DE 44 00 838 A (SMT & HYBRID GMBH) 20 July 1995 (1995-07-20) the whole document ----	1-9
A	EP 0 882 978 A (ST MICROELECTRONICS SRL) 9 December 1998 (1998-12-09) the whole document ----	1-9
A	LANG W ET AL: "POROUS SILICON TECHNOLOGY FOR THERMAL SENSORS" SENSORS AND MATERIALS, SCIENTIFIC PUBLISHING DIVISION OF MYU, TOKYO, JP, vol. 8, no. 6, 1996, pages 327-344, XP000609408 ISSN: 0914-4935 the whole document ----	1-9
A	DE 197 52 208 A (BOSCH GMBH ROBERT) 2 June 1999 (1999-06-02) the whole document -----	1-9